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Interpretation of Skindex-29 Scores: Response to Sampogna and Abeni

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TO THE EDITOR

Until recently, little was known about the interpretability of scores of the Skindex-29, a well-established, dermatology-specific health-related quality of life (HRQoL) instrument (Chren *et al.*, 1997a, b). Nijsten *et al.* (2009) and Prinsen *et al.* (2010, 2011) were the first to identify the clinical meaningfulness of Skindex-29 scores by estimating a categorization of Skindex-29 scores, denoting mildly, moderately, and (very) severely impaired HRQoL (Nijsten *et al.*, 2009; Prinsen *et al.*, 2010, 2011).

In their thoughtful commentary in the *Journal of Investigative Dermatology,* 131, (9) September 2011, Sampogna and Abeni persuasively showed how different methods, a distribution-based and an anchor-based method, respectively, result in different categorizations of scores (Sampogna and Abeni, 2011). They applied the distribution-based ranges of scores found by Nijsten *et al.* and the anchor-based cutoff scores found by Prinsen *et al.* to an Italian sample of inpatients diagnosed with psoriasis, and to another Italian sample of dermatological outpatients. By means of this comparison, differences between the two categorizations were shown; in general, the ranges of scores presented by Nijsten *et al.* were lower than the cutoff scores presented by Prinsen *et al.* Sampogna and Abeni also explored the clinical implications of these differences, for instance the consequence of using different categories in determining patient's eligibility for systemic treatment.

Unfortunately, a misinterpretation leading to an incorrect categorization

Table 1. An overview of the Skindex-29[1] cutoff scores derived by an anchor-based method (Prinsen *et al.*)[2] and the ranges of scores derived by a distribution-based method (Nijsten *et al.*)[3]

	Symptoms		Emotions		Functioning		Overall	
Categorization	Prinsen *et al.*	Nijsten *et al.*	Prinsen *et al.*	Nijsten *et al.*	Prinsen *et al.*	Nijsten *et al.*	Prinsen *et al.*	Nijsten *et al.*
Very little	—	<3	—	<5	—	<3	—	<5
Mild	⩾39	4–10	⩾24	6–24	⩾21	4–10	⩾25	6–17
Moderate	⩾42	11–25	⩾35	25–49	⩾32	11–32	⩾32	18–36
Severe	⩾52	26–49	⩾39	>50	⩾37	>33	⩾44	>37
Very severe	—	>50	—	—	—	—	—	—

[1]The domain scores and the overall score are expressed on a 100-point scale, with higher scores indicating a lower level of quality of life.
[2]Skindex-29 cutoff scores are derived from the original articles (Prinsen *et al.*, 2010, 2011).
[3]Categorization of Skindex-29 scores are derived from the original article (Nijsten *et al.*, 2009).

Abbreviations: HRQoL, health-related quality of life

of scores was made. To illustrate, according to Prinsen *et al.*, the cutoff scores for mildly, moderately, and severely impaired HRQoL on the emotions domain were $\geqslant 24$, $\geqslant 35$, and $\geqslant 39$, respectively, meaning that a patient with a score $\geqslant 24$ can be categorized as having a mildly impaired HRQoL on this domain, a score $\geqslant 35$ as ''moderate'', etc. However, Samponga and Abeni categorized ''mild'' as having a score between 0 and 23.9 and, as a consequence, misclassified all cutoff scores. Therefore, we would like to provide a correct overview of the categorization of Skindex-29 scores (Table 1).

Having said this, we fully agree with Sampogna and Abeni on the limitations of both methods, such as dependence on the distribution of HRQoL scores in estimation samples and biases when using prospective anchors. Nevertheless, we believe that, under the condition that the same scale or anchor question is being used, anchor-based methods may lead to less variant estimates of cutoff scores than distribution-based methods. In addition, anchor-based methods are less dependent on the sociocultural and clinical characteristics of the estimation sample. For example, patients in one sample, scoring themselves as having a severely impaired HRQoL on a global rating scale or anchor question (for instance, an anchor question such as ''In your opinion, how severe is your skin condition?''), are likely to have Skindex-29 scores in the same range of scores as patients of another sample who also score themselves as having a severely impaired HRQoL. Nevertheless, the phrasing of an anchor question is a great source of variation in the comparison of different cutoff scores. We therefore advocate the use of standardized anchors.

A clinically meaningful interpretation of Skindex-29 scores is of great value. At present, two studies on this intriguing subject are available. As already expressed by Sampogna and Abeni, the combination of an anchor-based and a distribution-based method in a subsequent study would allow an objective comparison of the results within one study population. In addition to this, we recommend including standardized anchors, and to conduct such a study on an international level. Eventually, such efforts will contribute to reaching consensus on the categorization of scores so that they can be applied in clinical practice.

CONFLICT OF INTEREST

The authors state no conflict of interest.

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Application of an Indoleamine 2,3-Dioxygenase–Expressing Skin Substitute Improves Scar Formation in a Fibrotic Animal Model

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TO THE EDITOR

Any delay in wound closure increases the probability of developing dermal fibrotic conditions such as hypertrophic scars (Deitch *et al.*, 1983). For patients with extensive burn injuries, one of the most promising approaches is the application of an engineered skin substitute containing both epidermal and dermal cells (Coulomb *et al.*, 1998). Where allogeneic skin substitutes can provide a rapid, patient-ready wound coverage, they are susceptible to immune rejection. Our approach has been to engineer an allogeneic skin substitute

Abbreviations: IDO, indoleamine 2,3-dioxygenase; SEI, scar elevation index